

Serial No. 10/642 388 - Page 2

Amendments to the Claims

This listing of claims will replace all prior listings of claims in the application.

Listing of Claims

OK to
amend
✓

1. (Currently amended) A monitoring device for melting furnaces to facilitate the monitoring of a break out of melt, comprising a closed circuit of several electrically conductive sections with at least a partially conducting surface and a measuring/displaying device, wherein a first conductor section is series connected to an ohmic resistor R and a second conductor section, ~~and~~ wherein the first conductor section is arranged directly adjacent, however, electrically isolatingly spaced from and with respect to the second conductor section, and wherein the ohmic resistor R is not subjected to the furnace temperature.

2. (Original) The monitoring device for melting furnaces according to Claim 1, wherein the conductor sections are interleaved in a comb-like construction or are looped meanderingly around one another.

3. (Previously presented) The monitoring device for melting furnaces according to Claim 1, wherein the ohmic resistor R is larger by a factor of 100 to 1000 than a resistance value of the series connected conductor sections.

4. (Original) The monitoring device for melting furnaces according to Claim 1, wherein the ohmic resistance value $R = 0.5$ to 50 kohm .

5. (Original) The monitoring device for melting furnaces according to Claim 1, wherein the ohmic resistance value $R = 1$ to 5 kohm .

BEST AVAILABLE COPY

(00022717.DOC)

Serial No. 10/642 388 - Page 3

6. (Previously presented) The monitoring device for melting furnaces according to Claim 1, wherein the measuring/displaying device indicates during undisturbed normal operation essentially the magnitude of the ohmic resistor R, during breakdown due to a conductor break the resistance value of infinite, and during run out of melt the resistance value of zero corresponding to a short circuit.

7. (Previously presented) The monitoring device for melting furnaces according to Claim 6, wherein the resistance value indications of infinite or of zero are each coupled with an acoustic or optic display.

8. (Previously presented) The monitoring device for melting furnaces according to Claim 6, wherein the resistance value indication of zero is coupled with a device for turning off of the furnace.

9. (Previously presented) A melting furnace with a monitoring device according to Claim 1, wherein the conductor sections are arranged around a crucible filled with melt.

10. (Previously Presented) The melting furnace with a monitoring device according to Claim 9, wherein the conductor sections are arranged holohedrally on the circumference of the crucible filled with melt.

11. (Previously presented) The melting furnace with a monitoring device according to Claim 9, wherein the conductor sections are arranged on a surface of a refractory liner which faces away from the crucible filled with melt.

12. (Previously presented) The melting furnace with a monitoring device according to Claim 11, wherein the refractory liner comprises a ceramic material.

{00022717.DOC}

Serial No. 10/642 388 - Page 4

13. (Previously presented) The melting furnace with a monitoring device according to Claim 9, wherein the crucible filled with melt forms a part of one of the conductor sections.

14. (Previously presented) The melting furnace according to Claim 9, wherein the monitoring device comprises one of several monitoring devices arranged around the crucible filled with melt to form a monitoring network.

15. (Previously presented) The melting furnace with a monitoring device according to Claim 9, including a refractory liner surrounding the crucible, wherein the ohmic resistor R has a resistance value that is clearly smaller than the resistance value of the refractory liner.

16. (Cancelled)

17. (Previously presented) The monitoring device for melting furnaces according to Claim 1, wherein the ohmic resistor ensures that the first and second conductor sections are otherwise electrically isolated from each other.

18. (Previously presented) A monitoring device for melting furnaces to monitor a break out of melt, comprising:
a measuring/displaying device;

a first conductor section electrically connected to the measuring/displaying device;

a second conductor section electrically isolated from the first conductor section and arranged adjacent to the first conductor section; and

an ohmic resistor connecting the first conductor section and the second conductor section to form a closed series circuit, which ensures that the first and second adjacent

(00022717.DOC)

Serial No. 10/642 388 - Page 5

conductor sections are electrically isolated from each other except for the current path of the ohmic resistor,

wherein said device monitors the resistance of the series circuit to detect a short circuit between the first and second conductor sections resulting from a break out of melt therebetween.

19. (Previously presented) The monitoring device for melting furnaces according to Claim 18, wherein the ohmic resistor R is not directly subjected to the furnace temperature.

20. (Previously presented) A furnace including the monitoring device according to Claim 18, comprising:

a crucible, wherein the monitoring device is arranged about the crucible; and

a refractory liner surrounding the crucible, wherein the first conductor section is mounted on the refractory liner,

wherein the ohmic resistor has a resistance value that is clearly smaller than the resistance value of the refractory liner.

(00022717.DOC)